The ‘third Porsche’ – an extraordinary success story

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10/06/2022 Ferry Porsche predicted it back in 1989: “If we build an off-road model according to our standards of quality, and it has a Porsche crest on the front, people will buy it.” He would go on to be proved right. Since 2002, the Cayenne has been one of the mainstays of the car manufacturer’s global success.

Porsche had to make some big decisions in the mid-1990s in order to secure its long-term economic success. At the beginning of the decade, the company found itself in one of the most significant economic crises in its history: it was in the red and delivered only 23,060 cars in the 1991/92 financial year. With the Boxster, launched in 1996, Porsche began to manoeuvre its way out of its slump. But it quickly became clear to the management that the legendary 911 and the new mid-engined model alone would not be able to lead the company into a secure future. Plans for a ‘third Porsche’ began to take shape, albeit initially without a firm decision on the segment.

On the recommendation of the US sales organisation, the company opted for an off-road vehicle instead of the people-carrier/MPV that was also under consideration. This type of vehicle was particularly on trend in North America – Porsche's largest market at the time. CEO Wendelin Wiedeking had also set his sights on the emerging Asian market. Ambitions were high right from the start: Porsche was not content merely to build a sporty SUV consistent with the brand, but aimed to give the top competitors in the off-road segment a run for their money.

The project 'Colorado'

This massive undertaking was ultimately tackled as part of a joint project with Volkswagen, dubbed 'Colorado', which was officially announced in June 1998: the Porsche Cayenne and Volkswagen Touareg would share the same platform. Despite the identical architecture, each manufacturer initially used their own engines and developed their own chassis set-ups. Porsche was responsible for developing the joint platform at its initially top-secret Hemmingen site, while Volkswagen contributed its production expertise for large volumes.

In 1999, Zuffenhausen decided to build the car in its home market rather than abroad, and constructed a new production facility in Leipzig, which was officially opened in August 2002. Its Volkswagen counterpart, the Touareg, was produced at the Volkswagen plant in Bratislava, Slovakia. The painted bodywork for the Cayenne was also sourced from there, with final assembly taking place in Saxony. Both the first and second model generations of the Cayenne – known internally as E1 and E2 – rolled off the production line in Leipzig and later also in Osnabrück. With the launch of the third generation (E3) in 2017, Porsche moved all Cayenne production to Bratislava to create additional capacity in Leipzig for the Panamera sports sedan and Macan compact SUV.

Its wide technical range makes the Cayenne a family-friendly touring vehicle that is also a robust off-roader and highly dynamic sports car with typical Porsche performance. With these characteristics, the Cayenne has done much to shape the sport utility vehicle (SUV) segment over the past 20 years. The first generation (E1) started off as confidently as one might expect from a Porsche: with a choice of two V8 engines. In the Cayenne S, the newly developed 4.5-litre engine generated 250 kW (340 PS), while the Cayenne Turbo managed an even more impressive 331 kW (450 PS) from the same displacement.

The all-rounder: sports car and off-roader with long-distance comfort

They reached top speeds of 242 and 266 km/h respectively – an important message to regular sports car customers, whose expectations in terms of the chassis were equally well met. The cornering dynamics were handled by newly introduced electronic systems: Porsche Traction Management (PTM) distributed drive power between the rear and front axles in a ratio of 62:38 as standard. The drive system was also variable by way of a multi-plate clutch and could implement any power ratio between

the front and rear wheels between 100:0 and 0:100 if required. Away from paved roads, Cayenne drivers could also depend on a low-range transfer box to improve traction. A fully locking centre-differential prevented the wheels from spinning even if they briefly lifted off the ground. Equipped with these capabilities, Porsche's first off-road vehicle was every bit the equal of competitors' well-known off-roaders, even during test drives in the car's development phase.

The first-generation Cayenne (E1) was also the first Porsche to feature the newly developed PASM. Porsche Active Suspension Management was offered together with air suspension. It continuously regulates the damping force and incorporates the condition of the road and the Cayenne driver's driving style into its calculations. Its air suspension also helped the Cayenne off-road: The already impressive ground clearance of 21.7 centimetres with conventional suspension went up to 27.3 centimetres with the help of the level control system within the air suspension. Porsche optimised its on-road performance at the beginning of 2006 with the introduction of the first Cayenne Turbo S, which attracted attention with its engine output of 383 kW (521 PS) from its 4.5-litre V8 biturbo engine, which was exceptional by the standards of the time.

Introduction of hybrid and plug-in hybrid drive systems

"Establish, sharpen, refine" is Porsche head of design Michael Mauer's matter-of-fact description of the evolution of the design from the original Cayenne to the third-generation model of the present day. It would be an equally fitting description of its technical progress: to optimise weight and performance, the second generation (E2) saw the replacement of the low-range transfer box by an on-demand all-wheel-drive system with an actively controlled multi-plate clutch, which is still in use today. Porsche also introduced hybrid and plug-in hybrid powertrains in the completely redesigned E2; these variants featured a Torsen centre differential. All existing engines gained additional power, with up to 23 per cent lower fuel consumption. The attention-grabber in the redesigned interior was the now rising centre console.

"The objective with the E3 was to heighten the range of capabilities even further," says Hans-Jürgen Wöhler, head of the Porsche SUV series from 2013 to 2020, looking back on the development of the third Cayenne generation. "It was all about making it sportier with greater ride comfort while maintaining off-road capabilities," he says. "A three-chamber air suspension and rear-axle steering were specially developed for this purpose.The new aluminium bodyshell saved weight, making the vehicle even more efficient and agile. But the E3 was also intended to offer a wide range of driver support capabilities through numerous new assistance systems," says Hans-Jürgen Wöhler. To this end, a central control unit now integrated all driver assistance systems. In addition, the large SUV received a connectivity update: smartphone integration, WiFi, Bluetooth. With the introduction of the third Cayenne in 2017, Porsche also bade farewell to the diesel engine and focused instead on the further development of plug-in hybrid technology. Another important milestone was the launch of the even sportier Cayenne Coupé, featuring a sharply sloping roofline like that of the 911, in spring 2019.

The hybrid pioneer: Boosted performance like a super sports car

On electric power alone, the plug-in hybrid models of the third Cayenne generation can reach speeds of up to 135 km/h and drive up to 44 kilometres with zero tailpipe emissions. Standard consumption according to WLTP is 3.1 to 4.1 l/100 km, depending on configuration and tyres. The hybrid models use the 17.9-kWh high-voltage battery and the 100-kW electric motor () not only for particularly efficient locomotion, but also for an emphatically dynamic driving experience. The model for the performance-oriented boost strategy of all current Porsche hybrid models is the 918 Spyder – the super sports car that was the fastest production car on the Nürburgring-Nordschleife at the time, not despite but because of its hybrid drive.

The most powerful Cayenne model is the Turbo S E-Hybrid, which has been available since 2019 and has a system output of 500 kW (680 PS;). As with all plug-in hybrids from Porsche, the driver of the top model can use the electric energy for additional thrust in any driving mode. For example, the Cayenne Turbo S E-Hybrid has a system torque of 900 Newton metres available virtually from a standstill, allowing the large SUV to accelerate from 0 to 100 km/h in 3.8 seconds. In mixed everyday driving, the driver can rely on the strategy of intelligent driving modes and enjoy superior propulsion with low fuel consumption.

The foundation for today's electrified model variants was laid back in 2007 with the model update of the first-generation Cayenne: in the close-to-series-production concept study of the Cayenne S Hybrid for the IAA, Porsche, unlike many of its competitors, relied not on a power-split hybrid but rather a parallel full hybrid. In this design, the electric motor is used not only when the car starts rolling, but also at higher speeds. This enabled the prototype to glide at up to 120 km/h without an active combustion engine. The electric motor also improved both acceleration and flexibility.

The full hybrid drive finally came onto the market in 2010 with the second -generation Cayenne – as the first series-production hybrid vehicle from Porsche. The combination of a 333 PS three-litre V6 supercharged engine and a 34 kW (47 PS) synchronous electric motor generated a system output of 279 kW (380 PS). This was followed four years later by the first plug-in hybrid, with which Porsche played a pioneering role within the premium SUV segment. The Cayenne S E-Hybrid already had a purely electric range of more than 30 kilometres. The nickel-metal hydride battery was replaced by a lithium-ion one. The combustion engine remained the same, while the e-motor output increased to 95 PS (70 kW), resulting in a system output of 306 kW (416 PS).

Supercar on any terrain: rally successes and lap records

The Cayenne is a sporty all-rounder and has demonstrated its capabilities in a range of extreme conditions. In 2006, two private rally teams each entered a Porsche Cayenne S in the Transsyberia Rally from Moscow across Siberia to Ulaanbaatar in Mongolia – and took first and second place. Porsche drew inspiration from the feat and developed a limited run of 26 Cayenne S Transsyberia cars tailored

to long-distance rallies as a customer racing vehicle – with resounding success. They scored a one-two-three finish at the 2007 Transsyberia, with a total of seven Porsches making it into the top 10.

The special equipment in the Cayenne S Transsyberia included specialist all-terrain tyres, a safety cage, a shorter axle ratio, a differential lock, reinforced front wishbones, and reinforced underbody panelling. The engine output of the V8 remained unchanged at 283 kW (385 PS). As the racing car was based on the updated first-generation version, the rally participants also benefited from the improvements implemented in the Cayenne: the new engines with direct fuel injection consumed up to 15 per cent less fuel, and the new Porsche Dynamic Chassis Control (PDCC) – in combination with active anti-roll bars – largely eliminated body roll in corners, while also enabling greater axle articulation. In 2008, 19 further optimised Cayenne S Transsyberia models started the Siberia Rally and took all but sixth place in the top 10.

Lap record for SUV on the Nürburgring-Nordschleife

While the Transsyberia Rally, which has not been held since, covered over 7,000 km and required around two weeks of driving, the current Cayenne Turbo GT needed just 20.832 km to demonstrate its peak sporting performance, posting a lap time of 7:38.925. On 14 June 2021, test and development driver Lars Kern set the lap record for SUVs on the legendary Nürburgring-Nordschleife in impressive fashion. Tuned for maximum accelerative and cornering performance, the Turbo GT is the undisputed top athlete in the Cayenne range. Its 471 kW (640 PS;), four-litre biturbo V8 engine provides the foundation for superb driving characteristics. The standard sprint to 100 km/h (62.14 mph) takes just 3.3 seconds and it doesn't hit its top speed until 300 km/h (186.14 mph). Featuring even sportier lines and available exclusively as a four-seater Coupé, the Cayenne Turbo GT was available with all possible chassis systems fitted as standard and performance tyres developed specifically for this model. The powertrain and chassis are independently tuned. The result is a harmonious overall concept with excellent racetrack characteristics.

The developers of the first Cayenne generation already had a variant model with dedicated on-road performance in mind when it came to expanding the model series shortly after its successful debut. Oliver Laqua, now the overall vehicle project manager for the Cayenne, was already working as a concept engineer for the E1 in 1998 and, in 2004, was commissioned to design a Cayenne that was particularly sporty in every respect. The young engineer's ambition was clear from the start, as Laqua aimed to develop a particularly lightweight vehicle under the project name 'Roadrunner'. "We planned to dispense with the transfer case, because that saved another 80 kilograms of weight. And we thought about four racing bucket seats for further weight reduction and a more emotive feel," Laqua recalls today. However, the fact that the 'Roadrunner' was to be offered exclusively with rear-wheel drive met with as little enthusiasm from the board as did the rather impractical bucket seats.

modern era

When it came to the powertrain system, however, the developers got their way: a naturally aspirated V8 engine instead of a turbocharged one. “In this project, it wasn't just the power that counted; the car also had to have real throttle response,” says Laqua. Standard equipment included a six-speed manual gearbox and a specially developed chassis. For the first time, the steel suspension was combined with the PASM controlled damping system – a concept that until then had been reserved for two-door sports cars. The front and rear resembled the Cayenne Turbo. The wheel arch extensions flared out by around 14 millimetres on each side, making the newcomer the most visually striking model. It was also 24 mm lower than the Cayenne S.

The name was taken from Porsche history books – the 928 GTS, which was discontinued in 1995 and whose designation in turn had come from the Porsche 904 Carrera GTS of the 1960s. The historic models with the suffix ‘GTS’ for ‘Gran Turismo Sport’ represented exceptional sportiness combined with outstanding long-distance capabilities. The first Cayenne GTS was launched in 2007 with the model update of the E1 generation. Its 298 kW (405 PS) output from 4.8 litres of displacement put it at the top of the list of Cayenne variants with naturally aspirated engines. In the second-generation GTS, output rose moderately to 309 kW (420 PS), and for the 2015 model update Porsche switched from a naturally aspirated V8 to a V6 biturbo for efficiency reasons. Despite the smaller displacement, this offered 15 kW (20 PS) more power and consumed less fuel. In the current Cayenne GTS, Porsche again relies on eight combustion chambers in the form of a 338 kW (460 PS;) four-litre V8 biturbo. Inspired by the resounding success of the Cayenne GTS, every model series at Porsche now has a particularly sporty GTS variant in its portfolio.

New markets, new customers: the Cayenne opens doors

Shortly after its world premiere at the Paris Motor Show in September 2002, the Cayenne became a worldwide success – and immediately exceeded sales expectations. Originally, it was expected that 25,000 examples would be delivered each year. In the eight model years of the first generation, 276,652 cars were sold – just under 35,000 vehicles per year. The millionth Cayenne, meanwhile, is now in the books – it rolled off the production line in the summer of 2020. In 2021, well over 80,000 examples had been delivered at the last count.

For Porsche, the Cayenne has created the economic basis for sustainable success without compromising the motorsport-based values of the sports car brand. “With the Cayenne, we have succeeded for the first time in successfully transferring the Porsche legend to a completely new market segment,” said Oliver Blume, Chairman of the Executive Board of Porsche AG, at the world premiere of the third generation on the roof of the Porsche Museum in 2017. "Our sports car in the SUV segment has proven to be a bestseller and growth engine since 2002. And that’s not all. The Cayenne has opened the door to many new markets for Porsche and made a significant contribution to the internationalisation of our sales network.”

The fourth generation of the Porsche Cayenne will be all-electric. A demanding test programme for the first camouflaged prototypes is already well underway. Porsche is simultaneously moving forward with the development of its powerful hybrid and combustion engine models. Up to and beyond 2030, the successful SUV will be offered with three powertrain variants worldwide.

MEDIA ENQUIRIES

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Image Sublines

Path: The ‘third Porsche’ – an extraordinary success story/Images/img_1.jpg
Title: Cayenne model at the development centre in Weissach, 2000, Porsche AG
Subline: June 2000: Porsche board members inspect a Cayenne model at the Weissach Development Centre.

Path: The ‘third Porsche’ – an extraordinary success story/Images/img_2.jpg
Title: Project "Colorado", Dubai, early 2000s, Porsche AG
Subline: Dune testing in sweltering Dubai: endurance test for the ‘Colorado’ project in the early 2000s.

Path: The ‘third Porsche’ – an extraordinary success story/Images/img_3.jpg
Title: Cayenne Turbo, Cayenne S (l-r), 2002, Porsche AG
Subline: The first generation: a Cayenne Turbo (left) and Cayenne S in front of the customer centre in Leipzig in 2002.

Path: The ‘third Porsche’ – an extraordinary success story/Images/img_4.jpg
Title: Cayenne, 911, Boxster, 2002, Porsche AG
Subline: The beginning of a great success story: the Cayenne (E1) debuts in 2002 as Porsche's third model series after the 911 and the Boxster.

Path: The ‘third Porsche’ – an extraordinary success story/Images/img_5.jpg
Title: Cayenne S Hybrid, 2010, Porsche AG
Subline: Hybrid pioneer: in 2010, Porsche launches its first series-produced hybrid vehicle with the second-generation Cayenne, the Cayenne S Hybrid.

Path: The ‘third Porsche’ – an extraordinary success story/Images/img_6.jpg
Title: Cayenne Turbo S E-Hybrid, 2019, Porsche AG
Subline: Porsche continues to focus on e-performance: from 2019, the most powerful model would be a plug-in hybrid: the Cayenne Turbo S E-Hybrid.

Path: The ‘third Porsche’ – an extraordinary success story/Images/img_7.jpg
Title: Cayenne S Transsyberia, 2007, Porsche AG
Subline: Ready for anything: with a limited run of 26 Cayenne S Transsyberia models, Porsche celebrates a string of triumphs at the Transsyberia Rally in 2007 and 2008.

Path: The ‘third Porsche’ – an extraordinary success story/Images/img_8.jpg
Title: Cayenne GTS, Cayenne GTS Coupé, Porsche AG
Subline: Seat position of an SUV, performance of a sports car: with the Cayenne, Porsche brings the GTS theme into the modern era for the first time in 2007.

Path: The ‘third Porsche’ – an extraordinary success story/Images/img_9.jpg
Title: Cayenne GTS, 2020, Porsche AG
Subline: In 2020, the 1,000,000th Cayenne rolls off the production line in Bratislava, Slovakia: a GTS in crimson.

Path: The ‘third Porsche’ – an extraordinary success story/Images/img_10.jpg
Title: Uwe-Karsten Städter, Member of the Executive Board for Procurement, Andreas Haffner, Member of the Executive Board for Human Resources, Albrecht Reimold, Member of the Executive Board for Production and Logistics, Dr. Wolfgang Porsche, Chairman of the Supervisory Board, Lutz Meschke, Deputy Chairman of the Executive Board and Member of the Executive Board for Finance and IT, Uwe Hück, Former Chairman of the Group Works Council, Oliver Blume, Chairman of the Executive Board, Detlev von Platen, Member of the Executive Board for Sales and Marketing, Michael Steiner, Member of the Executive Board Research and Development, l-r, Cayenne, World premiere Cayenne, Porsche Museum, 2017, Porsche AG
Subline: August 2017: the third Cayenne generation (E3) celebrates its world premiere on the roof of the Porsche Museum in Stuttgart-Zuffenhausen.

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